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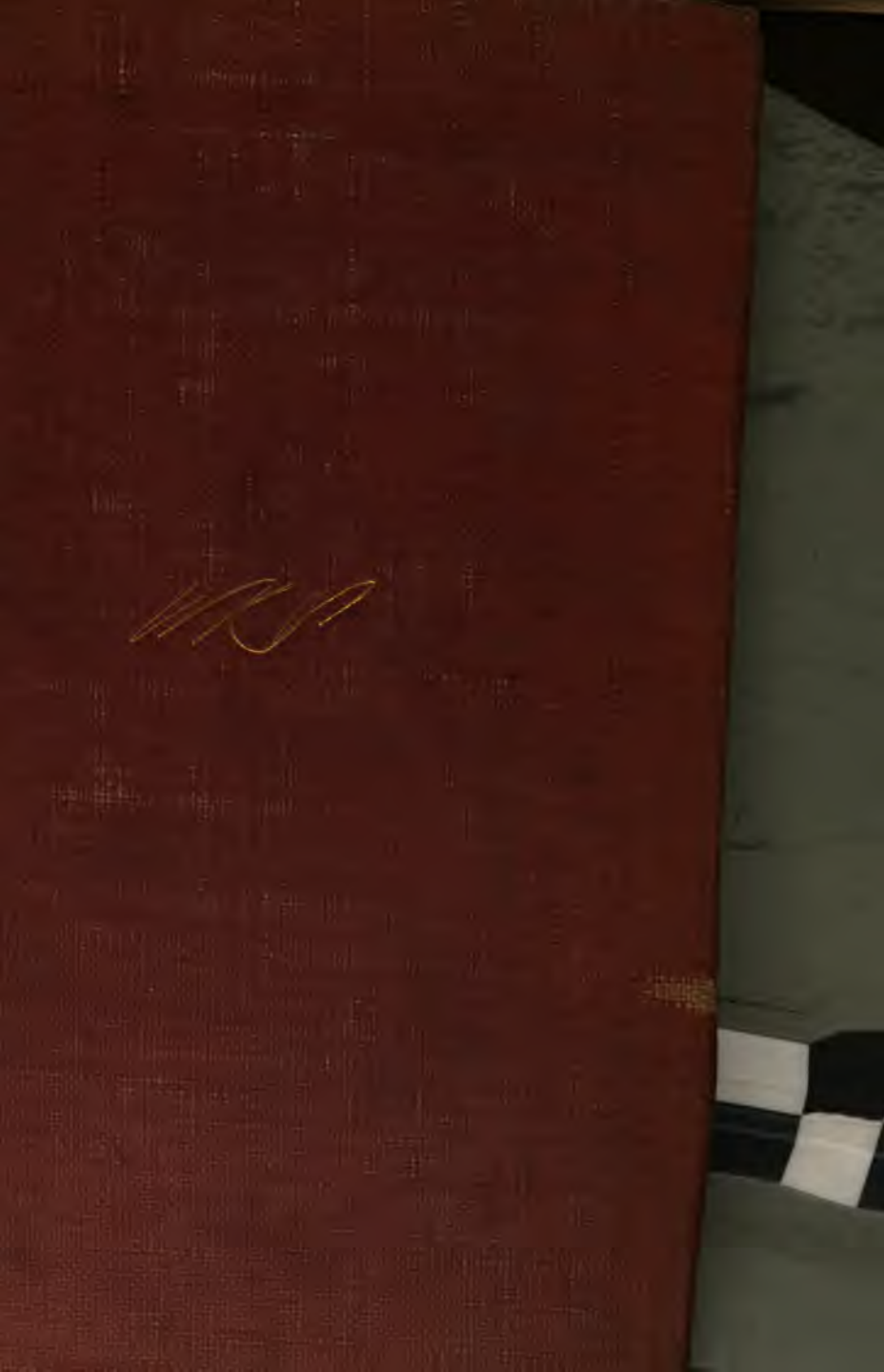

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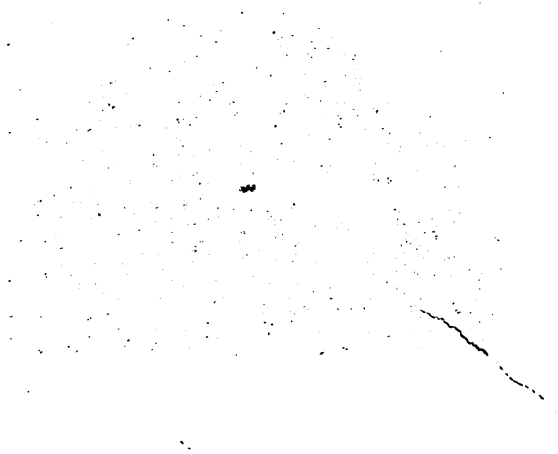
WILLIAM KITCHEN PARKER

W K Parker



William Kitchen Parker

F.R.S.

SOMETIME HUNTERIAN PROFESSOR OF ANATOMY
AND PHYSIOLOGY IN THE ROYAL COLLEGE
OF SURGEONS OF ENGLAND

A Biographical Sketch

BY HIS SON

Thomas
T. JEFFERY PARKER

London
MACMILLAN AND CO.
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1893

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NATURE never did betray
The heart that loved her; 'tis her privilege,
Through all the years of this our life, to lead
From joy to joy; for she can so inform
The mind that is within us, so impress
With quietness and beauty, and so feed
With lofty thoughts, that neither evil tongues,
Rash judgments, nor the sneers of selfish men,
Nor greetings where no kindness is, nor all
The dreary intercourse of daily life,
Shall e'er prevail against us or disturb
Our cheerful faith, that all which we behold
Is full of blessings.

THE following pages are founded upon a short sketch of my father's life and work, which was circulated in manuscript among the members of the family shortly after his death. I am not altogether responsible for the delay in publication.

My sincere thanks are due to Professor Huxley for his very interesting letter printed on p. xi, and to several of my father's correspondents who have most kindly placed his letters to them at my disposal. I must also express my great indebtedness to the

Obituary Notice in the *Proceedings of the Royal Society*, vol. 48, by Professor Rupert Jones and Mr. J. E. Harting; and to an article in the *London Quarterly Review* for April 1891, by the late Mr. G. T. Bettany. Mr. Bettany was in the habit of taking notes of my father's conversations, and I have therefore quoted freely from his records, only venturing to correct one or two trifling inaccuracies.

T. JEFFERY PARKER.

March 1893.

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INTRODUCTORY LETTER

My dear Parker — The biography of your father, which you have allowed me to read, gives a presentation as accurate as it is vivid, of a man of noble and lovable character, endowed with intellectual powers of a very unusual order. In fact, I have never met with another such combination of minute accuracy in observation and boundless memory for details, with a vagrancy of imagination which absolutely rioted in the scenting out

of subtle and often far-fetched analogies. The genius of an artist struggled with that of a philosopher, and not unfrequently the latter got the worst of the contest. In our innumerable confabulations over your father's work I considered it my duty to pose as the stern ally of the weaker side ; and it grieves me to think of how many waifs and strays (often of much literary beauty, but with no earthly business where they made their appearance) I may be responsible for smothering. My merciless criticisms were accepted with unfailing sweetness ; but the proverb about the difference between taking a horse to the water and making him drink has a particular application to cases of this kind. One is an expositor by nature, or not at all.

Your father simply poured his mind into his drawings and spread it out over the manuscript which, as it were accidentally, accompanied them. The result is a marvellous body of documentary evidence, quite unprecedented for extent and for accuracy, in which the adept morphologist will find a store of valuable facts and suggestions, while the neophyte will more probably become hopelessly lost. "To him that hath shall be given" would be an appropriate motto for the whole collection of monographs.

The only personal recollection of my old friend which it occurs to me to mention has reference to the occasion (mentioned in the Biography, p. 83) when, as the recipient of a Royal Medal, he had to speak at the

Royal Society Dinner. Practised speakers find a performance of this kind somewhat of an ordeal; and, I confess, I was not a little anxious as to how a man of your father's retired habits and highly-strung nervous organisation would get through it. My anxiety proved altogether superfluous. I have listened to a great many such speeches, but never to a better, whether in matter or in manner. For dignified simplicity, pure English, and literary quality, John Bright has provided the only parallel in my experience. It was a curious illustration of what character will do for a man. The duty of expressing truthfully and to the best of his ability that which it seemed fitting to his candid and modest mind should be

said, weighed upon your father, to the complete exclusion of all other considerations, and it made him for the nonce a perfect orator.—Ever yours very truly,

T. H. Huxley.

I

My father's birthplace is an old farmhouse in the little village of Dogsthorpe, about two miles from Peterborough: a rambling, white-washed, stone building, partly of one, partly of two stories, thickly thatched with reeds, and standing at the end of a charming garden full of old-fashioned flowers and well-grown trees. The house was built in 1635 by one Walter Sly, whose initials are duly carved on a gable-end. The large, low rooms, with great beams crossing the ceiling,

the window of the sitting-room or "house" with its broad ledge always full of flowers, the staircase with its heavy oaken balustrade, the wide, open chimney in the kitchen, all combined to make the house as delightful inside as outside it was picturesque.

My father was always pleased to recall the numerous Shakespearian names in his county: Walter Sly he connected with Kit of that ilk, and a neighbouring field, known as "Nabb's—formerly pronounced Napp's—close," gave him a sort of personal interest in that mysterious personage Old John Naps of Greece.

The village is of the usual midland type, a single straggling street of cottages and farm-houses, with a smithy and a little general shop, the mingled odours of which linger in the nostrils after half a lifetime. There was, however, no church, as the village was in

the parish of St. John, Peterborough, and mission-rooms were not then invented. As a walk of two miles to and from church was a serious thing to the hard-worked peasants on their one day of rest, the religiously disposed attended the church in the neighbouring village of Paston, while the rest spent their time, when the public-houses were shut, in leaning against walls, clad in smock-frocks or in the gorgeous velveteen sleeved-waistcoats, which now no longer add their pleasing bit of red to the rural scene.

To remedy this godless state of things, my grandfather, who was a Wesleyan of the old school—a Methodist-Churchman—had services on Sunday evenings in one of his cottages, and afterwards took the chief share in the erection of a chapel—a tiny brick building with a pulpit, some dozen pews for the farmers, and forms behind for the

labourers. According to the custom of the Methodists of that day, the chapel services were never held at the same time as those of Paston church, where my grandfather was regular in his attendance. But for the deeper spiritual wants of his nature he found more satisfaction in the earnest homely worship of Methodism than in the colder, more formal, and perhaps rather perfunctory services of the Church of England of that time. My father's religious views and religious life were a direct outcome of this, now obsolete, mingling of churchmanship with dissent.

My grandfather, Thomas Parker, was a working farmer, farming his own land—an upright, God-fearing man, with the native courtesy so often associated with the provincial speech and dress of the midland yeoman. Although possessed of no special intellectual ability, he must have been a very

capable business man: he made his farm pay handsomely, and was able to provide a respectable patrimony for each of his children. He married a farmer's daughter, Sarah Kitchen, from whom my father considered he inherited his intellectual tastes. She was a great reader, and it was not long before her death that my father sent her his large copy of Milton's Poems, that she might renew her acquaintance with her favourite author. I remember her well as a refined, sweet-faced old lady in a large white cap and auburn "front," knitting by the window of the "house" in the wheel-chair in which, owing to paralysis of the lower limbs, she was condemned to pass her latter days.

My father's connections on both sides—Parkers, Newtons, Kitchens, and Christians—seem to have all been farmers, those on the father's side the more practical, those on the

mother's side the more contemplative. One of his maternal uncles was a somewhat remarkable character in his way: he neglected his farm to sit up reading, his favourite subjects being geology and archæology. He took a great interest in the parish church of his village—Skillington, Lincolnshire, where Sir Isaac Newton went to school—and when I last saw him was helping to get a memorial window erected to the late vicar, Mr. Hudson, who was killed during the descent of the Matterhorn, in Mr. Whymper's celebrated expedition. He was also notable for his Lambertian proportions, weighing at least twenty-three stone—how much more was never known, as the scales refused to register anything higher. When he was measured for a coat, no tape could be found to meet round his "waist," and he had to tell the tailor to "stick in a pin and begin again."

My father, the second son, and, with the exception of six little ones who died in infancy, the youngest child of his parents, was born on the 23rd of June 1823. He used to say that his earliest recollection was of the joy he felt, when about three years old, at the sight of a marsh-marigold or "water-blob"—a characteristic reminiscence since, to the end of his life, the beauty of a wild-flower was to him a source of the keenest enjoyment.

He was sent when quite young to a dame-school in the village, and afterwards to the parish schools of Werrington and Paston: more than this his father does not seem to have thought necessary; and, like other boys of his station in life, the intervals of school-time were filled up by work on the farm—uncongenial enough to a lad whose delight was in Nature and in books, and who would will-

ingly have given all his spare time to reading, looking after his pets, and preparing skeletons. He often spoke with enthusiasm and gratitude of the benefit received during boyhood from the *Penny Magazine*, edited, if I remember rightly, by P. M. Roget, and would often run long distances to get the monthly number a little earlier. Besides reading all he could get hold of, he taught himself drawing: he learnt shading by observing the sun-illuminated railings, and a pencil drawing of some sheep which I saw years afterwards at the paternal farm-house was a very creditable production for a self-taught boy.

This kind of life—farm-work tempered by intermittent schooling—went on till he was over fourteen, when the incongruity between what he was doing and what he felt himself fitted for forced itself upon him and

he "struck." To quote his own words as reported by Mr. Bettany :—

"Thirty-nine years ago this day (*i.e.* in 1838) I came home from the turnip-field, from cropping up the ball of the turnips after the sheep had eaten all they could get at—wet, and weary, and utterly miserable; and I made up my mind that should be the last of it. Next day—Sunday—in the afternoon, I said to my father: 'Father, I'm going to school to-morrow. This is not the sort of work I'm cut out for in life, and I can't stand it any longer.' He said, 'Very well, my lad, you shall.' I said, 'Thank you, father,' and was happy. My idea then was that I would be either a bookseller or a lawyer."

The result of this assertion of himself was that he went for three quarters of a year to the Peterborough Grammar School, under the

Rev. William Cape. There he learnt all the Latin and Greek he ever knew, which I fancy was almost as much as many people are able to remember as the result of the seven or eight years usually devoted to these subjects.

By the time this short grammar school course was over he had reached his full height of 5 feet 9½ inches, growing 8 inches between fourteen and fifteen years of age. His schoolfellows nicknamed him "Tony Lumpkin," and the chaff to which his short coat-sleeves and trousers exposed him led to the only breach of the peace he was ever known to commit: he silenced his persecutors by thrashing the biggest of them, and was thereafter let alone. His rapid growth seems to have had a permanently weakening effect: from this time he was always frail and weakly, and suffered enough to bring a man of less energy into a condition of permanent invalidism.

It was during his fifteenth year that he began to lead the intensely religious life for which he was thenceforth remarkable. Full of life and energy, ingenuous and sincere, he had no taint of the morbid condition of mind often associated with youthful piety, or of the superficial saintliness so readily assumed by imitative children under suitable surroundings; but to him the things of the spirit were the truest realities, and the development of his own spiritual nature at once the highest duty and the keenest joy.

II

My father's short boyhood was now over. After leaving school at the age of fifteen he finally decided to have nothing to do with farming, and was apprenticed to a druggist named Woodroffe at Stamford. Here, like Marryat's Japhet, he learnt "the rudiments"; but, not content with learning to decipher prescriptions and compound potions, undertook, out of hours, an amount of work which is a sure index of his wonderful industry and enthusiasm.

". . . We opened at 7 A.M. and shut at

10 P.M. So I used to get up often three hours before seven, and go out over the fields and woods botanising; and thus in two summers I collected and preserved five hundred species of plants. I have them now. I used to go out with my fellow-apprentice Jack Day; and sometimes I had to pull him out of bed or pommel him before he would get up. . . .

"I read my first Physiology while making sheep-ointment in a huge trough, with a lot of pestles revolving by machinery, into which two quart bottles of quicksilver were emptied and mixed with grease and various other ingredients, and then revolved till the *quick*-silver was *killed*, and then again mixed. While this was going on I managed to do some reading."

He was often accompanied on his botanical expeditions by his life-long friend, the Rev.

Samuel Walker. He used to wake him by throwing stones at his window, and while Mr. Walker was dressing employed his time by learning the Book of Proverbs by heart.

It was in this way that he acquired his remarkably extensive and accurate knowledge of botany ; for the rest of his life every native flower and weed was to him as a personal friend. His sight was very keen, and to the end of his life he would name every plant in the hedgerow during a country walk, or on the railway bank as he passed it in the train, giving its characteristics, medicinal properties, and place in the Linnean classification. And in accordance with his poetic temperament a flower to him was not a mere specimen, but a " revelation of order and beauty."

At the end of three years Mr. Woodroffe, for whom he entertained the greatest respect and affection, told my grandfather that he

could teach William no more, and with rare generosity offered to release him from his indentures. By this time he had fully decided upon a medical career, and his master, with more insight than might have been looked for in a country druggist, is said to have prophesied that his unconventional apprentice would one day be a Fellow of the Royal Society. He was therefore apprenticed in 1842 to a country surgeon, Mr. Costal, of Market Overton, with whom he remained about two years, greatly appreciating the pleasantness and refinement of his new surroundings after the rougher life of farm and shop. Here also the process of self-training went on: at Stamford he had mastered the systematic botany of the district; at Market Overton he taught himself comparative anatomy, dissecting numbers of birds and mammals, and accumulating a portfolio of

exquisitely beautiful and accurate drawings—so accurate that he was able to make use of them after he had become an acknowledged master in animal morphology. Yet his enthusiasm for anatomy did not prevent a keen and permanent distaste for its unpleasant aspects. "I always have a horror," he said, "of the flesh of anything that has been alive. My dissection is done against a continual sensitive repulsion to it, and to the odours characteristic of different animals."

All this time, as throughout his career, he lived the double life of saint and student. He made a regular practice of meditating in the fields for an hour every evening, and his health, previously far from strong, suffered from a regimen which no one with his constitution should have attempted to practise. He accustomed himself to take only two

meals a day, frequent fainting fits being the natural result.

The next move was to London, the home of the rest of his life. He entered at Charing Cross Hospital in 1844, and at the end of the same year was appointed assistant to Dr. R. B. Todd, the physiologist, at King's College. His medical studies were carried on partly at these two institutions and partly at a private school in Bedford Square. His mode of life at this time was rather a remarkable one for a medical student, taking into consideration that he was within ten years of being a contemporary of Mr. Robert Sawyer and Mr. Benjamin Allen. To quote his own words as recorded by Mr. Bettany :—

"When I was a young hospital student, no one led a more regular life. I worked hard till five in the day, then went home,

read my Bible for an hour it might be, and often spent part of the evening at prayer-meetings, class-meetings, or in visiting the sick. Coming home at ten o'clock to supper with a gloomy surgeon and his silent wife, I would explode with fun and humour so as to astonish them. It was just the same when visiting my father at home, then partly paralytic; I would talk to him over texts of Scripture and thoughts I had gathered up from my better opportunities, and then at supper I would be boiling over with fun, till father would say, 'What's come to the lad!'"

His enthusiasm and genius must have made him an ideal student to a teacher with the slightest spark of his own fire, but to the more conventional lecturer he must have been a little trying. I believe he never took a note in his life, and resolutely declined to

sit for any examination beyond what was absolutely necessary for qualifying him as a general practitioner. His chief, Dr. Todd, once took him to task for making sketches of all sorts at lecture, instead of taking notes. My father replied that this was his way of listening, and that he understood and remembered what was said as well as any of the note-takers. Todd, in fact, never seems to have understood him, so after working for three quarters of a year in the vaults at King's College at dissection, histology, and experimental physiology, my father threw up his appointment, conceiving that his master would never give him fair play. But Todd's even more distinguished colleague, Mr., afterwards Sir William, Bowman, formed a juster estimate of the bright-eyed, impetuous country lad. He says in a letter to Mr. Bettany written shortly after my father's death :—

"Every one was charmed by his almost boyish simplicity, passion for nature and anatomical work, lovableness.

"At a later period I always thought it very touching to notice him quite unchanged, devoted with passionate zeal and delight to the researches in which he was immersed, and by which he was winning so much renown (though renown he never dreamt of), while patiently and most conscientiously enduring the daily round and toil of a commonplace general practice, and rearing a young family in slender circumstances to an upright and honourable future.

"He was a bright, happy, loving man, full of reverence, intensely feeling the pure pleasure of the contemplation and investigation of Nature, who greatly advanced knowledge because apparently he could not help doing it, the joy was so pervading. He much,

in many ways, reminded me of Michael Faraday."

His vacations at this time were spent in a characteristic manner. Bowman's classical researches on the structure of the kidney had just given a great impulse to the study of the capillaries or microscopic bloodvessels. The subject had evidently taken a strong hold on my father: when he went home for the holidays he converted the barn into a dissecting-room, and dissected every animal that died on the farm or that he could procure in the neighbourhood, such as "vermin" of all kinds from the keepers. His largest subjects seem to have been a donkey and a large seal caught in the Willand at Stamford. He injected the more important organs, usually with chromate of lead, and mounted literally hundreds of preparations. I have several of these, and they are very interesting as showing

the advance in microscopical technique in forty years: they consist of slices of the various organs of any shape and size, and about $\frac{1}{16}$ to $\frac{1}{40}$ inch thick, mounted, in pure Canada balsam, on slips of glass of various sizes without cover-glasses. They are, however, excellent as injections, and by reflected light give a good notion of the diverse arrangements of capillaries.

Both in London during the medical session and at Dogsthorpe in the vacations he continued his elaborate and thorough study of comparative anatomy, producing sheet after sheet of faithful and artistic drawings of skeletons, viscera, etc. They are all worthy of publication, but "researching" was not a recognised thing in those days, and they remained in his portfolio, unseen save by a few friends, until in 1885 they were exhibited at one of the conversazioni of the Royal

Society. His drawings of the external form of animals, made at the Zoological Society's Gardens, were often less successful, but showed the same faithfulness in detail: he made, for instance, an elaborate study of the form and arrangement of the spots of the giraffe.

He took the most effectual and laborious way of acquiring a thorough knowledge of the subject he was afterwards to make his own by preparing and setting up large numbers of skeletons, principally of fishes. In my childhood, as I well remember, his consulting-room wall was covered with glass cases, made by himself, containing skeletons of fishes of various sorts and sizes—I think the largest was a tunny. Many of these he afterwards sold to the College of Surgeons, and they are now in the Hunterian Museum. But he also prepared smaller skeletons, especially of birds, by the hundred, keeping the

loose bones of each in a draper's cardboard box or a seidlitz-powder box, generally with a strip of blue paper at the bottom to show off the white bones. I think nothing more perfect in this branch of zootomy has ever been done than some of his skeletons of the smaller birds: as a handicraftsman in all work requiring delicacy of touch and keenness of sight he was unequalled.

During his student's career he attended Owen's lectures at the College of Surgeons, and received with enthusiasm the doctrine of the Archetype which he was afterwards to do so much to overturn. The death of the master, then in the prime of life and at the height of his reputation, is fresh in the mind of every one: the pupil, afterwards the second in command and the first in labours of the rival force of morphologists, finished his course nearly three years ago.

III

DURING the latter part of his student-life my father made the acquaintance of his future wife, Elizabeth Jeffery, youngest daughter of Thomas Jeffery, then clerk to the Vauxhall Bridge Company. He could hardly have married into a family more different in character from his own, for my mother's relations on both sides were just as typical townsfolk as his own were rustics. My maternal grandfather was a good-natured methodical man of business with no ideas beyond his account books. My grandmother,

a woman of much strength of character, kind and hospitable, was the daughter of Michael Prendergast, a prosperous cloth merchant of Irish Roman Catholic descent, two of whose sons attained a certain position in their day. The eldest, Joseph Prendergast, D.D., was for many years Head-master of Lewisham Grammar School, and wrote a Latin grammar, now forgotten. The second, Michael Prendergast, Q.C., was Recorder of Norwich, and afterwards Judge of the Sheriff's Court, London, an able but eccentric man, whose absent-mindedness is recorded, not in the most charitable spirit, in Serjeant Ballantyne's *Reminiscences*. I cannot resist the temptation of mentioning that the wife of Michael Prendergast the younger was a daughter of George Dawe, R.A., whose big pictures are remembered no more, but who lives as the hero of the delightful story of the goose in

Charles Lamb's *Recollections of a Late Royal Academician.*

My mother inherited the strong, sweet nature of her mother, and by her never-failing common sense and her calmness under good or evil fortune supplied precisely those qualities in which my father was deficient, and so enabled him to tide over troubles and disappointments which would otherwise have driven him to despair.

In 1849, not long after his engagement, my father began practice at 124 Tachbrook Street, Pimlico. After practising for six months he had earned the magnificent sum of five pounds, and upon this—supplemented it need hardly be said by his patrimony—he was married on 1st January 1850 at St. John's, Westminster, a gloomy, four-pinnacled church, said to have been designed on the model of Queen Anne's footstool

when overturned by Her Majesty in a rage.

The practice prospered sufficiently to allow of a move, after two or three years, to a larger house, 18 Bessborough Street, and some twelve years later to 36 Claverton Street, the house which most of those who knew my father, after his position as a leader in science was assured, will remember best, and where he remained until his retirement from practice in 1883.

I have no doubt that had he given his mind to it he might have been a very successful practitioner: his keen insight and unrivalled manual dexterity, as well as his sympathy for suffering and the almost boyish cheerfulness of his intercourse with those who were not too ill to be joked with, made him very popular with his patients, and would, with ordinary precautions, have indefinitely in-

creased their number. But he made no attempt to attract a paying class of patients. Instead of a well-appointed waiting-room, patients were shown into an uncomfortable little "surgery" at the back of the house with nothing to amuse them but medicine bottles and jars of anatomical specimens. The consulting-room table, instead of being loaded with mysterious instruments and the latest editions of imposing medical works, bore only birds' skeletons, embryos in process of examination, watch-glasses of foraminifera, and the various appliances for dissection and microscope work. It was the same with his library : at the time I remember it, the place of honour was assigned to Clarke's *Commentary* in six quarto volumes ; near it were Bishop Butler's *Works*, Howe's *Sermons*, Bacon's *Essays*, Shakespeare, and the publications of the Royal and Zoological

Societies; while on the upper shelves reposed a few ancient medical works, never disturbed except at spring cleaning. In fact, his strictly professional reading was almost confined to the *British Medical Journal.*

Thus his practice always came second to research and was never very large or lucrative. It included a considerable number of what he called "Kingdom of Heaven patients"; to these — principally old women who came for ether mixture for their spasms—he was just as kind, sympathetic and chatty as to those who contributed to his income. In the patients themselves, in fact, viewed as human beings and not as mere "cases," his interest was immense. His first impulse with new-comers was always to try and guess their native county by some peculiarity of speech or manner, and nothing delighted him more than to find he was

right. His interest in the ethnology of the British Isles is well shown by the fact that the annual task of examining medically large numbers of candidates for admission to a training college was always a pleasure and not, as many would think it, a piece of rather disagreeable routine work.

He made one attempt to escape from practice by becoming a candidate, in 1861, for the conservatorship of the Hunterian Museum, on the death of Professor Queckett. The temporary disappointment at his want of success soon gave way to the conviction that the Council of the College of Surgeons had acted wisely in electing Mr. (now Sir) W. H. Flower, and the successful rival soon became the life-long friend. He wrote in 1863 to Mr. Flower, "If your big *farm* lay close to my little *garden* I should often put my bony legs over the fence and be your

voluntary assistant from mere love of the place and the work: the pleasure would moreover be intensified by your presence."

His self-training in biology was carried on during his early married life on very broad lines. He studied, with characteristic intensity, not only Vertebrata, but Protozoa—especially Foraminifera, Hydrozoa, and Polyzoa. Of the last three groups he mounted many hundreds, if not thousands, of slides, but it was only in the first of them — the Foraminifera—that he was destined to get beyond the mere mounting and naming stages. It is curious to reflect how thoroughly, at this period, his work was to all outward seeming that of an amateur. He even spent a considerable time in preparing and mounting, with exquisite neatness and effect, great numbers of skeleton leaves, a task which in most hands would have been utterly unscien-

tific and trivial, but in his case served to give a conception of individual variation which was turned to excellent account in one of his earliest papers on the Foraminifera.

From what I know of his character, I believe he might have gone on in this way for an indefinite time, making preparations and accumulating stores of knowledge, without any thought of publishing his results or of using his knowledge for any purpose but self-culture. Of course he was bound to become known to other workers in time, but his retired habits might have made this a work of years if he had not fortunately been discovered by Mr. T. Rupert Jones, who in the early fifties lived near him—in Bessborough Gardens — and who by his genial and kindly influence supplied the liberating energy which converted him from a mere learned amateur into a scientific

worker with a definite object for his work. Henceforward he worked consciously for the advancement of science, starting with a capital of accumulated knowledge on nearly all branches of biology such as few naturalists ever acquire.

My father's first paper, "Description of some Foraminifera from the Coast of Norway," was written in conjunction with his friend Rupert Jones, and was published in the *Annals* and *Magazine of Natural History* for April 1857; and in the following year his first independent paper, "On the Miliolitidæ," appeared in the *Transactions of the Microscopical Society*. The latter shows very clearly how thorough was his grasp of the subject, and how far he had advanced beyond the limits of the dilettante or the species-maker. The following sentence is

noteworthy as occurring in the first independent utterance of a self-trained worker in the days before Darwinism.

"Indeed those who have honestly and earnestly set themselves to the task of distinguishing species have found that they are dealing with an 'unbound Proteus' in a thousand shapes, who must be distilled to his native form; the true morphological idea of each species being attainable only by a long labour of observation and comparison, not only of the varieties of one species, but also of species with species, and of genus with genus."

For many years he continued to devote a considerable share of his time to the Foraminifera, the result being the large series of papers written in conjunction with Professor Rupert Jones, between 1857 and 1872, the most important of which is the large memoir on the Foraminifera of the

Atlantic and Arctic Oceans, published in the *Philosophical Transactions* for 1865. Later papers on the same subject were written in collaboration with the late Dr. H. B. Brady, and the standard general work on the group — Dr. Carpenter's "Introduction" — owes much to the labours of the two men, then almost unknown, whose names appear on the title-page with that of the author. From first to last my father wrote more than thirty papers on this branch of Zoology, either alone or with one of his fellow-workers, and, taking the quality as well as the quantity of the work into consideration, the record would have been a very good one if it had stood alone.

But in the meantime he was devoting much attention to the subject he was to make especially his own — the Vertebrate skeleton — and in 1860 published his first

paper on this branch of Zoology, a monograph on the skeleton of that extraordinary bird, the *Balæniceps* of the Nile Valley. This gave him at once a high rank among comparative anatomists: it is certainly a remarkable maiden effort; no mere piece of descriptive anatomy, but positively bristling with illustrations and comparisons, and showing a knowledge of the subject equally wide and deep. The key to the complicated question of affinities had, however, not been grasped; he had apparently not read the *Origin of Species*, which appeared about seven months before "Balæniceps" was read at the Zoological Society, and he expresses a doubt as to "whether this network of affinities owes its present incompleteness to losses in the past, or is to be filled up by future creations": the question is evidently looked upon as one to be decided on metaphysical

grounds, by an appeal to the argument from symmetry.

In his next paper, on the "Osteology of Gallinaceous Birds and Tinamous," his point of view has undergone a marked change: although anxious not to rank himself among evolutionists, the following passage shows clearly enough the tendency of his mind.

"At the dawn of the very day on which I received from Dr. Sclater the priceless skeleton of the Tinamou, I was ruminating upon the possibility of the existence of a bird in which the gallinaceous and struthious natures should be blended. The unmistakable evidence of a certain struthious tincture (such as I had seen in no other bird) in the skull of *Syrrhaptes*, combined with the mingling of the blood of various types in that mixed bird and in the Hemipode—these things put together caused me to have the day-dream

of some cock-and-ostrich mule. On that day my dream came true. I foresee that there will be opposition in the minds of some; for there are cultivators of zoology, as well as of theology, who have the greatest powers of disbelief; but shall their unbelief make the truth of none effect?"

Another passage is significant as showing that, in spite of his adherence to the theory of creation, his extensive studies had forced upon him the conception of a natural classification as a genealogical tree.

"To assist my own imagination in grouping the members of the bird-class, I compare it as a whole to a low spreading tree 'with a shadowing shroud,' and having 'his top among the thick boughs.' Such a tree will have his 'little plants' (its *phytons*) very small and extremely numerous amongst the closely interwoven mass of its twigs; but

where the twigs culminate in open space and end upwards and outwards, there will be a much fuller expansion of the spreading leaf-form. Yet down amongst the grass, at the very roots of our imaginary tree, we shall find the most inordinate growth of leafy individuals. Essentially the base of the trunk contains all the rest; and, essentially, at each bi- or tri-furcation we have all that is above that particular forking; at the extremities of the twigs we cease tracing, and if we would run up another branch we must return to the forks and begin our work from an old point."

While these and similar papers were passing through the press, he was engaged in one of the most justly celebrated of his works, *A Monograph on the Structure and Development of the Shoulder-Girdle and Sternum in the Vertebrata*, in which the

various bones and cartilages which serve for the support of the fore-limb are traced from their earliest and simplest condition in the lower fishes, and in the embryos of the higher forms, up to the complete and complex form assumed in the full-grown reptile, bird, and mammal. This book of some 250 folio pages of letterpress and 30 tinted plates was published by the Ray Society in 1868, and was well described at the time by the late Professor Rolleston as "only less vast than valuable." Unless I am misled by my feelings towards its author, it will always rank high among the major contributions to animal morphology.

The first germ of this memoir is a short paper published in the *Proceedings of the Zoological Society* for 1864, and it is characteristic of my father that although Gegenbaur's work on the same subject appeared in

the interval between the publication of the preliminary communication and that of the finished monograph, he makes no allusion to the labours of the great German anatomist, of whose memoir it is safe to say he had never heard: he read neither French nor German, and was far too much absorbed by his own researches to care about taking up his time in the barren, though as most people think necessary, labour of ascertaining the precise share taken by his predecessors in solving the problem at which he was engaged.

One of the chief results of this work was, by demonstrating the true homologies of the various bones of the shoulder-girdle in fishes, to overthrow, once for all, Owen's theory of the nature of limbs. Every one who has examined a bird's skeleton with any care must have been struck with the little flat

bones which spring from the margin of each rib, and pass backwards overlapping the next following rib; these are the uncinate processes, or, as Sir Richard Owen called them, "diverging appendages." Arguing from the condition of things found in bony fishes, in which certain of the shoulder bones are attached to the hinder or occipital region of the skull, Owen advanced the theory that the bones of the shoulder-girdle were the ribs of the so-called "occipital vertebra," and the fore-limbs its diverging appendages. My father showed that the true shoulder-girdle never has any direct connection with the skull, of which it is from the first totally independent, and that the bones by which the two are brought into connection in those highly specialised vertebrates, the teleostean and ganoid fishes, are modified portions of the skin-skeleton, having the same morphological

value as the scales of a perch or cod, or the armour-plates of a sturgeon. He further demonstrated the futility of judging the simple fin of a fish by the standard of the complex limb of a reptile or mammal, and introduced the custom, now universally adopted, of calling the supporting bones of the former "rays," and not, as Owen had always done, toe-bones or phalanges.

Naturally, discoveries of this kind shook his faith in the great system of transcendental anatomy which Sir Richard Owen had done so much to establish, and even in the preliminary paper his revolt from the anatomical orthodoxy of the day is complete. He says—

"I do not mention this part of the fish as if no other region of its body had suffered from being dragged into harmony with that mischievous piece of fancy work, 'the vertebrate archetype.' It is high time for us to

have ceased from transcendentalism; of what value is it? Our proper work is not that of straining our too feeble faculties at system-building, but humble and patient attention to what Nature herself teaches, comparing actual things with actual."

Now and then, indeed, he shows a little of the intolerance of the convert: in reference to Owen's useful and now widely adopted reform in the nomenclature of the parts of a vertebra he writes with characteristic hyperbole:—

"I hope never again to use that mischievous word 'apophysis' with its ninety and nine prefixes; it was a cloudy and dark day for anatomical science when the transcendentalists 'with their enchantments' brought this swarm upon the land."

Many of the discoveries in this memoir have now become the commonplaces of the

text-books. Among them is the demonstration of the fact that the keel of the breast-bone in birds of flight is developed from a separate centre of ossification, while in the flightless struthious birds, such as the ostrich, emu, and kiwi, this characteristic keel-bone is absent. The demonstration of the complex character and relations of the clavicle or collar-bone of mammals is also very thorough, and, like everything else in the book, supported by a cloud of witnesses in the shape of artistic drawings of the author's exquisitely perfect dissections.

IV

BUT my father's greatest work is undoubtedly that on the skull, for, although published at intervals during a period of twenty-five years and in various publications, the entire series of papers on this subject is really a single colossal contribution to one of the most difficult and intricate problems in morphology—a contribution the magnitude of which may be partly measured by the fact that it consists of nearly 1800 pages of letter-press and about 270 plates.

To enable the reader to appreciate the

value of this series of monographs it is necessary to give a short sketch of the history of the subject up to the time when my father took it up.

Until nearly the end of the last century the skull had been studied simply as an exceedingly complex assemblage of bones; little or nothing was known of its development, and no theory had been advanced to account for the curiously regular way in which its constituent bones are arranged. But in 1790, as Goethe was walking in the Jews' cemetery at Venice, his servant picked up and handed to him a broken sheep's skull, and the idea flashed upon the poet's mind that the structure and mutual relations of the occipital, sphenoid, and ethmoid bones were explained by supposing them to be greatly modified vertebræ, so that, as the brain is an enlargement of the spinal cord, its containing

case is the specialised anterior end of the backbone.

But this fertile conception, as Professor Huxley says, "dropped still-born from Goethe's mind," and nothing more was heard of the vertebral theory of the skull until it occurred afresh to Lorenz Oken, of Jena, who enunciated it in his inaugural dissertation in the year 1807. He demonstrated very thoroughly the segmentation of the skull, *i.e.* the fact that it is composed of similar parts—the so-called cranial vertebræ—arranged in a single series from before backwards, like the joints of a backbone or the divisions of a lobster's "tail"; but this signal service to science was almost crowded out of sight by a mass of crude and unsupported theories, such as the extraordinary notion that the nasal cavity is the thorax of the head and the mouth its abdomen, the

lower jaw its legs and the teeth its toes. In fact, in Oken's own summing-up of his position "the entire man is only a vertebra."

Oken's views were developed and modified by several continental writers, but in England they made little headway until they were taken up by the then Hunterian Professor, Richard Owen, till a few weeks since the venerable *doyen* of English zoological science. In 1846 he presented to the Southampton meeting of the British Association his once-famous "Report on the Archetype and Homologies of the Vertebrate Skeleton," in which his views on philosophical anatomy are set forth in great detail. The skull is considered to be formed of four vertebræ, the occipital, parietal, frontal, and nasal vertebræ, between which are intercalated three pairs of sense-capsules, the turbinals lodging the organ of smell, the sclerotic that

of sight, and the petrosal bone that of hearing. The upper and lower jaws, tongue-bone, and shoulder-girdle are pressed into the service as the ribs of these vertebræ, and even the fore-limbs, as already mentioned, are forced to take their places as "diverging appendages." Every difficulty was settled by reference to an ideal plan or *archetype* —a bed of Procrustes to which the most awkward facts were by judicious manipulation compelled to adapt themselves. The whole theory was, in fact, as Owen's greatest critic said, an "attempt to introduce the phraseology and mode of thought of an obscure and scholastic realism into biology." Nevertheless everything was set forth in such clear and forcible language, and was supported by such a wealth of carefully selected facts, that the very general acceptance by English anatomists of the Owenian

version of the vertebral theory is hardly to be wondered at.

The weak point of the theory was that it was based almost exclusively upon the higher or more specialised skulls, and even in these it took no notice of the earlier embryonic stages. If the skull really consists of a number of vertebræ, we should naturally expect the vertebral structure to be more obvious in the lower species than in the higher, in the youngest embryo than in the fully developed animal. Owen ignored the lampreys, sharks, and skates, in which the brain-case consists of an undivided mass of cartilage, and he makes no reference to the researches of Rathke, who had shown in 1839, in his work on the development of the snake, that there was no indication of the four vertebræ in the early embryo. It was by following up these two lines of argument

that Huxley was able, in his Croonian Lecture, delivered before the Royal Society in 1858, to deal the vertebral theory a blow from which it never recovered. He showed from a study of the early stages of development of the stickleback and frog, and from the anatomy of the lower fishes, that the segmentation of the skull in the higher Vertebrata is a secondary process, quite independent of vertebration, that the farther the skull is traced back the less appearance is there of vertebræ, and that "it is no more true that the adult skull is a modified vertebral column than it would be to affirm that the vertebral column is a modified skull."

The main points of Huxley's thesis have never been shaken, and are to-day the common property of the text-books. But the embryological evidence he brought for-

ward, though strong enough as far as it went, rested upon a somewhat narrow basis: the early history of the skull was known only in some half-dozen animals, and in these only the outlines of the process had for the most part been made out. What was now wanted was a careful, unbiassed study of the whole process in the largest possible number of vertebrate animals, so as to find out precisely what was common to vertebrates as a whole, what characteristic of each class—of fishes, amphibians, reptiles, birds, and mammals—and what special to the particular animal under discussion.

This was the task my father set himself to do, and the measure of his success is best understood by comparing the Croonian Lecture, which gives a very full account of the state of knowledge of the subject up to 1858, with the chapter on the skull in Balfour's

Comparative Embryology, published twenty-three years later. In the interval he had traced the skull back to its first beginnings in the dog-fish and skate, the salmon, the frog, the turtle, snake, lizard and crocodile, the fowl, and the pig, and had made less elaborate studies of numerous other forms.

In estimating both the magnitude and the importance of this work, it must not be forgotten that my father must be compared, as an embryologist, with Dugès, Rathke, and Huxley, not with Dohrn, Balfour, and Wiedersheim. Except in his later researches, when he had the assistance of younger men, his methods were those of a past generation. Nowadays when the skull of an embryo is to be investigated the head is hardened with chromic acid and alcohol, embedded in paraffin, and cut by machinery into slices not exceeding the one-thousandth of an inch in

thickness. The sections are mounted in order, the various structures read off, and the skull reconstructed from the absolutely exact data thus obtained. Before the art of mechanical section-cutting was invented, the embryologist had to rely upon the ordinary methods and instruments of anatomy, and it was here that my father's unrivalled manual dexterity and keenness of sight came into play. His only tools were a microscope, a student's box of dissecting instruments, none of them specially small or fine, a razor, a few needles mounted in handles, a pocket magnifier, and an old foot-rule. He never used a simple microscope, or even improvised a stand for his pocket-glass. He would take a tadpole's head, not more than an eighth of an inch long, between his finger and thumb, and either cut it into slices with a razor, or dissect off the superficial tissues with needle

and scalpel until the delicate bars and plates of soft cartilage forming the skull were exposed. Then examining partly under the pocket-lens, partly under a low power of the compound microscope, occasionally verifying some matter of detail under a $\frac{1}{4}$-inch object-glass, and measuring with the foot-rule, he would combine his results into the exquisite drawings with which his papers were illustrated. By constant practice his hand and eye became as unerring as those of a skilful painter, and he could make more of a single badly-preserved specimen than the majority of competent anatomists of a dozen well-preserved ones. To appreciate the feats of skill performed in his earlier work, the modern embryologist has merely to try and repeat, with his appliances, his observations on the early stages of the tadpole and the chick.

In his later investigations he worked with the thin sections of to-day, but these were always cut by his second son : in his methods, as in most other things, he was conservative to a degree, and nothing would induce him to learn the use of the microtome or the embedding-bath. As he wrote to Dr. Huggins acknowledging the gift of a new pocket-lens :—

" I should have gone on with my old one until it was worn out, or until my hand couldn't hold it. All my forefathers have been unchanging farmers ever since the old Aryans came over here, and we all from time immemorial have gone on mending old ploughs and wheelbarrows until all their primary substance was replaced by new, but *buy a new one*—no! that wasn't in our line. These old husbandmen had 'great patience, waiting for the former and the latter rain,'

and *that* I've got into my protoplasm; otherwise I fear that a third of a century in London has 'evoluted' me very little indeed."

V

FURTHER researches will doubtless add, and indeed have already added, much to my father's work on the skull, especially as regards the earlier stages of development, in which his imperfect methods and his tendency to consider everything but the skull itself as of secondary importance prevented a really exhaustive treatment. But there can be no doubt that the entire series of papers is a unique work, and of permanent value. And this in spite of his most obvious fault as a scientific writer—his lack of lucidity. He

spared no trouble in working out his results and in making his drawings; but when it came to writing the paper, he seemed to think that the sooner a comparatively unimportant task was got over the better. He wrote without system, putting down everything as it occurred to him, and continually going off on side issues. He never revised: it was always the first draft of his MS. that went to the printer, and none but minor alterations were made in proof; and such methods of assisting the reader as abstracts, careful descriptions of figures, etc., always seemed to him superfluous, or at least not worth the trouble.

Professor Huxley, who was his constant correspondent and fellow-worker at the skull for many years, and whose advice and criticism he valued more than those of any other man, did his best to train him to a

more systematic way of recording his results. As early as 1865 he wrote, *à propos* of the paper on the skull in the ostrich tribe:—

"Very few pieces of work which have fallen in my way come near your account of the struthious skull in point of clearness and completeness. It is a most admirable essay, and will make an epoch in this kind of inquiry." Professor Huxley then gives some suggestions for the improvement of the paper, which was at that time in manuscript, and continues: "You start subjects enough for half a dozen papers, and partly from the compression thus resulting, and partly from the absence of illustrations, I do not believe there are half a dozen men in Europe who will be able to follow you. Furthermore, though the appendix is relevant enough—every word of it—to those who have dived deep as you and I have, to any one else it

has all the aspect of a string of desultory discussions. As your father confessor, I forbid the publication of the appendix. After having had all this trouble with you, I am not going to have you waste your powers for want of a little method—so I tell you.

"What you are to do is this [then follows a programme for future work]. I will give you two years from this time to execute these four memoirs; and then, if you have stood good-temperedly the amount of badgering and bullying you will get from me whenever you come dutifully to report progress, you shall be left to your own devices in the third year to publish a paper on 'The General Structure and Theory of the Vertebrate Skull.'

"You have a brilliant field before you, and a start such that no one is likely to catch you. Set deliberately down over against the city, conquer it, and make it your own,

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à propos of this subject; *e*, affinities of Archæopteryx with Ursa major], however tempting the side issues *a*, *b*, *c*, *d*, *e*, may be."

But remonstrance was in vain: in spite of a keen sense of his own shortcomings and of repeated attempts to amend, my father continued to write in his own style, and in 1870 the "father confessor" returned to the charge.

"I read all the most important part of your frog paper last night, and a grand piece of work it is—more important, I think, in all its bearings than anything you have done yet.

"From which premisses I am going to draw a conclusion which you do not expect, namely, that the paper must by no manner of means go in to the Royal Society in its present shape—and for the reasons following.

"In the first place, the style is ultra-Parkerian. From a literary point of view, my dear friend, you remind me of nothing so much as a dog going home. He has a goal before him which he will certainly reach sooner or later, but first he is this side the road and now on that; anon he stops to scratch at an ancient rat-hole; . . . or may be he catches sight of another dog, a quarter of a mile behind, and bolts off to have a friendly or inimical sniff. In fact his course is [a very curly line] not [a straight line]."

There is no doubt that the want of definiteness in my father's writing lessens immensely the value of his researches on the skull, but in another department of his work it is a still greater drawback. Besides the monographs on special types, he published several papers dealing with the skull in

certain whole groups of vertebrate animals, such as the frogs and toads, the tailed amphibians, and certain orders of birds and of mammals. Here more than anywhere a strictly logical mode of treatment was required : it was necessary above all things to bring out clearly and precisely the evidences of affinity of order with order, family with family, and genus with genus, and to avoid putting those who consulted the paper for purposes of systematic zoology rather than of detailed anatomy into the unfortunate position of being unable to see the wood for the trees. The matter is specially regrettable in the case of birds, with which my father's acquaintance was extensive and peculiar. Professor Huxley once said in a lecture at the School of Mines: "I know of only one man who knows all about birds, and that is my friend Mr. Parker." With

a little more sense of proportion, a little more disposition to sink the special in the general, he would have been remembered as one of the few great scientific ornithologists.

From the strictly scientific point of view, then, my father's style was a bad one, and as a natural result his works are to a great extent a sealed book to all but specialists. As I once heard Professor Huxley say at the Royal Society, "It was said that Shelley wrote poetry for poets: Mr. Parker writes anatomy for anatomists." But from the purely literary standpoint the case is altered: he was one of the very few modern writers on biology who can be said to have a style at all. Scattered up and down his writings are passages of great beauty, of true and sincere eloquence, and of quaint whimsical humour. I cannot but think that the following extracts have a literary value

quite apart from the matters of which they treat.

"This is a new kingdom of science, this embryology, but you have to enter it through a strait gate and a narrow way; there is no royal road to it. For here unless a man stoops his head he will bruise it; unless he enter silently he will learn nothing. It is not nature revealed in a strong wind, or an earthquake, or a fire; it is the still small voice of the growing cells he must train his ears to hear."

"When the eyes of the prophet's servant were opened, he saw no longer barren rocks with mist resting upon them, but the whole mountain was full of chariots of fire and horses of fire. The vestments and ritual of nature may take up all the attention

and use up all the energy of her votaries; these superficial observers fail, however, to find the real religion of nature—the beautiful but awful omnipresence which every flower and every insect reveals. The phenomena of nature are all mere fading pageants, and the really cultivated mind only finds lasting satisfaction in meditation upon the recognisable forces that underlie all sensible appearances."

"I shall leave the Quadrumana in their awkward and disagreeable contiguity to the ruling race. Nothing is so unpleasant as to be pestered with poor relations, especially if they be foul in feature and rude in manners. Surely these old people of the land have been left among us—nature not driving them all out at once from the human Canaan—that they might be as thorns in our sides, and as

goads and snares, that we may be pricked on to high courage and strong resolves in our moral work of extinguishing all that is ape-like in our nature. For my own part, when, as a biologist, I walk abroad for pleasure, it is not into the 'back-slums' where these mammalian satyrs live; and if it be my lot to undergo metempsychosis, I shall pray to be transformed rather into a barnacle than into an ape, 'with forehead villainous low.'"

"If the Megatherium, or his somewhat more modest-sized relation, the Mylodon (another extinct sloth), did find their supply of food in the way palæontologists suggest, their mode of dining must have been a sight worth seeing. That delightful, typical Englishman, the late Rev. Sydney Smith, once reviewed Waterton's *Wanderings*, and de-

scribed the strange, grotesque, weird, unthought-of creatures of the New Tropics. Would that he held the pen here, now!

"Let us, however, try to imagine a Megatherium waking up after lazily dozing a month or two during the dry season, and then, hungry and wet, in the heavy downpour of the beginning rainy season, setting to work to break his fast. As far as can be judged by the tools he had to work with—paws a yard, and claws a foot, in length—the first thing to be done was to throw out a few hundredweights of earth from the roots of some large tree.

"Now he changes his tactics; he has good collar bones, and well-shaped arms for embracing; so, bear-like, he hugs the tree upon which his desires are set, and, busily digging still, not now with his fore, but with his hind, paws, his great weight resting upon his

haunches and his tail, he, with many groans, sways the big tree to and fro; at last with a great crash it falls, not, however, without giving him some sense of its weight, for it was a tree worthy to grow in a forest trampled upon by this Atlantean sloth.

"That large crack in the outer table of his skull is of no consequence; his small brain is a long way off, and there are many empty cavities to be found in a head like his; those broken tiles over the empty spaces of his head will soon be mended, and what would be pain to us is to him a pleasant sense of tickling.

"But sloths live in trees, climbing from branch to branch, supine, with strongly bent wrists and hooked fingers! Yes, I admit, such sloths as live in these degenerate days, but not the sloth I am speaking of. Think, if you can, of a sloth half as thick again

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the nether parts of the earth, we are reminded, by way of contrast, of the poet's account of the slow but sure *fossilisation* of the rude forefathers of the hamlet—

'Each in his narrow cell for ever laid.'

Seven feet of earth is enough for the biggest of these undeveloped, mute, inglorious Miltons of the little lone country place.

" When, however, the General Sexton gave the Megatherium his seven feet of earth, this was merely the measurement crosswise, for he was nearly that breadth across his loins with his flesh and his fell on; his length was double that and more. If time had not failed me, I would have described his parts and his power and his comely proportion. I might have dilated upon his feet, to the extent of filling a chapter; the spoor which they made, being filled by timely rains, made

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it had been praised by Charles Kingsley. He is describing how in his work on the fowl's skull he had traced the development backward, from older to younger stages.

"Whilst at work I seemed to myself to have been endeavouring to decipher a palimpsest, and one not erased and written upon just once, but five or six times over.

"Having erased, as it were, the characters of the culminating type—those of the gaudy Indian bird—I seemed to be amongst the sombre grouse; and then, towards incubation, the characters of the sand-grouse and hemipod stood out before me. Rubbing these away in my downward work, the form of the Tinamou looked me in the face; then the aberrant ostrich seemed to be described in large archaic characters; a little

while and these faded into what could just be read off as pertaining to the sea-turtle; whilst, underlying the whole, the fish in its simplest myxinoid form could be traced in morphological hieroglyphics."

Both in its merits and its demerits, "le style, c'était l'homme." Fervour, poetic feeling, insight; combined with indefiniteness and inability to perceive that a statement of the subject as it occurred to himself was not all that was necessary to those who came fresh to it. In a word—he was a seer but not an expositor.

On several occasions he appealed to a larger audience than is in the habit of reading the Transactions of the learned societies. In 1877 he published, in conjunction with Mr. G. T. Bettany, a text-book on the Morphology of the Skull. This work is valuable as giving a clear and adequate abstract of

my father's researches on the subject up to date, and may be described as a series of condensed monographs translated from Parkerese into everyday English. Its fault, from the point of view of the student, is that it takes little or no account of the work of other men, and so fails to give that general view of the subject which is desirable in a text-book.

In 1878 he wrote, in conjunction with one of his sons, the article "Carnivora" in the popular *Natural History*, edited by Professor P. M. Duncan for Messrs. Cassell. This was his only attempt at anything like bookmaking, and it very naturally added nothing to his reputation.

In 1875 he wrote the anatomical part of the article "Birds" in the ninth edition of the *Encyclopædia Britannica*. Here he was on firm ground: besides a wide general

acquaintance with the whole subject, he knew more of certain departments of it than any other man. But he missed his opportunity. Out of twenty-nine pages seventeen are devoted to the skull, and eight more to the rest of the skeleton, while the remainder of the subject is disposed of in about three pages consisting mostly of extracts from Huxley's *Anatomy of Vertebrated Animals*. His idea was to write his best and fullest on those portions of the subject he had thoroughly worked up; he quite failed to see the necessity of working up the rest in order to write about it.

At one time he contributed several short articles on popular science to the *Globe*, and more than once attempted to write for one of the Reviews. But, as he was perfectly well aware, his articles were not a success. He wrote in 1890 to Mrs. (Lady) Flower: "I

cannot write readable articles: my natural vanity and self-consciousness—which I am always praying and fighting against—has had some most wholesome snubs. I have written two articles in my time for the Reviews; the editors have never asked for a second. No! I blurt out things in conversation and in letters at a white heat of feeling, and then I am 'silent and astonied,' and have no more to say. I can't formulate things."

Lastly, in 1885 his Hunterian Lectures for the preceding year were published in book-form under the title of *Mammalian Descent*, a book which is unsatisfactory enough if one goes to it with a view of getting a succinct statement of our present knowledge as to the mutual relations and phylogeny of the Mammalia, but which is in great part very charming reading, full of quaint fancies and suggestive illustrations,

and breathing throughout a fresh, youthful, intense devotion to nature and nature's God, not unworthy of Wordsworth or of Izaak Walton.

VI

THE value of my father's scientific work soon began to be recognised by those best able to judge of it. In 1864 the Zoological Society paid him the compliment of electing him a Fellow without the usual payments, and in 1865 he was one of the fifteen candidates selected by the Council of the Royal Society for election to the Fellowship of that learned body. In the following year he received what he always considered—at least apart from the Hunterian Professorship—as the greatest honour of his life, one of

the two Royal Medals given annually by the Queen on the nomination of the Royal Society. In presenting the medal at the anniversary meeting on 30th November, the President, Lieutenant-General, afterwards Sir Edward, Sabine, referred to my father's work on the Foraminifera, but stated that what the Society particularly designed to honour were his contributions to Vertebrate Osteology, and went on to say, "In these elaborate and beautifully illustrated memoirs Mr. Parker has not only displayed an extraordinary acquaintance with the details of osteology, but has shown powers of anatomical investigation of a high order, and has made important contributions towards the establishment of the true theory of the vertebrate skull."

At the anniversary dinner in the evening, my father had to reply to the toast of the medallists, and as Mr. Bettany says, "those

who knew his constitutional nervousness and especial horror of great public functions were in some anxiety as to the result. We have learnt from several sources that the new medallist's speech was a complete success, telling mainly the story of his own life and study, with such modesty, candour, naturalness, and indescribable interest, that it has always been a subject of regret that it was not taken down in shorthand."

In 1871-3 he held the office of President of the Royal Microscopical Society, and during his term of office communicated several short papers and addresses which were published in the *Monthly Microscopical Journal*, then the organ of the Society. In 1876 he was elected an Honorary Fellow of King's College, London, where he had worked under Todd and Bowman so many years before. He also received the Fellowship of the Linnean

Society; the Honorary Membership of the Academy of Natural Sciences, Philadelphia, of the Imperial Society of Naturalists of Moscow, and of the Cambridge Philosophical Society. And in 1885 the Baly Medal of the Royal College of Physicians was awarded to him.

But the most important distinction he received, and the one which marked most emphatically his scientific position, was his appointment, in 1873, to the Hunterian Professorship at the Royal College of Surgeons. Before he could hold office he had to become a member of the College; and, as already mentioned, he had hitherto been content with the minimum qualification of L.S.A. As the College grants no honorary diplomas, it was necessary for him to submit to a *vivâ voce* examination, which must have been quite a unique thing in its way. I believe he was

asked the name of some process in a human vertebra and replied that he really could not remember, but that in the crocodile—and then launched out into a discourse on the general morphology of the vertebral column.

He delivered altogether ten courses of lectures at the College on various branches of vertebrate morphology. As far as I can judge, his lectures were most appreciated by those who knew nothing about the subject but enjoyed listening to a discourse which was always fresh and breezy, and sometimes eloquent. But the anatomist, who went to learn the latest views of a master on one of the most difficult problems of morphology, was sure to meet with a good deal of disappointment. My father usually began very nervously, and with the most studied and unnecessary simplicity. Once, for instance, he took a considerable time in

describing in great detail, and in popular language, the method of embedding an embryo for section-cutting. Soon, however, he warmed to his work, and then anything like elementary treatment was abandoned once for all; he spoke as if every one in the room knew all his own and Professor Huxley's papers by heart, and considered cranial morphology as the one thing worth knowing. The lecture was supposed to be, let us assume, on the skull of birds: before it was a third over, some point would arise requiring reference to the Amphibia for its elucidation; this produced a digression, in the course of which birds were almost forgotten, and at the end of the hour it would be found that the subject he had undertaken to lecture on was hardly begun. Again and again he made vows of amendment: on one occasion his second son helped him to draw up a complete syllabus of

his lectures, arranged so that he might see at a glance how far he had got and how much remained to be said before the clock struck. But it was all to no purpose: after the first few minutes the notes were utterly forgotten. As he himself said in a letter to Professor Flower: "I got over my work in a chatty, old-auntish kind of way—*extempore*, you know, for reading like a parson isn't in my line." In fact, his lectures were marked by the same characteristics as his writings—profound knowledge and intense enthusiasm, combined with and largely marred by want of system and of a due sense of proportion.

Up to the age of fifty, my father, while producing more original work than any other English anatomist, was entirely dependent on his practice for a livelihood, and was subject to all the uncertainties, all the daily

and hourly worries, inseparable from the life of a general practitioner. Twice—in 1856 and 1874—he suffered long and serious illnesses, resulting not only in weeks of enforced idleness, but in an inevitable falling-off of practice and consequent diminution of income. Even when he was supposed to be well, he never passed a day without pain or enjoyed an unbroken night's rest. It was not until 1874 that some relief came, and the variable income of his profession was supplemented by one or two small but fixed sums, the certainty of which was of far greater importance to him than the amount.

Besides his Professorship he was appointed in 1874, through the thoughtful kindness of some city friends, a director of the Star Life Assurance Association. Of course the incongruity of turning an enthusiastic scientific recluse, with the most elementary

notions of business, into a "guinea-pig," struck every one who knew him. Professor Huxley wrote: "I congratulate you on becoming a city man—thou dove among the hawks! But I am really rejoiced that the Aëtomorphs feed the Peristeromorph instead of reversing the process." The appointment was, however, one of the greatest blessings of his life: apart from the remuneration, he was once a week taken out of himself, and away from the cares of life and the almost fierce joys of research; while the intercourse with his fellow-directors—many of them valued and dear friends—was a thing he always looked forward to and was always the better for.

In 1876 a sum of money was voted to my father from the Government Grant Fund of the Royal Society for the encouragement of scientific research. This continued what the Hunterian Professorship and the Director-

ship of the "Star" had begun—ensured him a certain if temporary income, and so delivered him from the constant anxiety which the uncertain receipts of his practice always produced. There never was a man more obviously intended to live on a small fixed income. He had absolutely no extravagances, lived plainly, dressed as shabbily as was allowable to a professional man, and cared little for general society, and nothing at all for amusements. But debt, or the prospect of it, reduced him to such a state of nervous prostration that he was able only by a strong effort to continue his work, and all my mother's calmness and power of soothing were necessary to convince him that ruin was not close at hand. It is no exaggeration to say that he would have been happier all his life with a settled income of £400 a year than with a variable one of thrice that amount.

A letter written to Sir William Flower, at the time when the Government Grant was first talked of, contains a characteristic passage :—

"I've had my chat with T. H. H., and he has had my application for money assistance in my work, and a list of post-medal papers. I am not agoing to be humbugged if nought comes of that : 'a man's a man for a' that,' and 'as is the man so is his strength' —mine principally lies in patient, long-suffering, slow, unremitting work : and if the scientific world lets me slip whilst alive, I mean so to live that it shall respect my memory when I am dead : that'll do for me."

Delivered from the uncongenial work of medical practice, he moved in 1883 to a pleasant house in Trinity Road, Upper Tooting, where he remained until circumstances obliged a final move into a smaller

but equally suitable house in Hendham Road. It is quite characteristic of him that although the reduction in income which necessitated this step caused him at the time absolute mental torture, yet when everything was settled, the certainty of what was left—including a small Civil List pension awarded to him in 1889—made the end of his life calmer and freer from worry than all his previous years had been. For the short time left to him his life was that of the devout and earnest student, neither hasting nor resting, but adding daily to the sum of human knowledge, and finding his keenest joy in the consciousness that his work was faithfully done.

A letter to Mr. F. W. Lucas, written when the move to Hendham Road was in contemplation, is very characteristic. The transport of his large collection of spirit-

specimens was a matter of serious anxiety under these circumstances—so serious as to make real work impossible for the time.

"I hope we shall all shake together again at Michaelmas and become a pleasantly congruous plantation of colonists. I feel rather 'dree' here, for I have done no proper work since midsummer, and there is no end of work waiting. But I've got to endure the agonies of 'flitting' before any more work *can* be done, and my heart is in *those bottles*, downstairs and up, and if *they* are cracked, *it* will be torn and lacerated, and divellicated and permanently ruptured.

". . . Then there are my 300 kinds of birds' wings, and all the other bird-work, and the opossums and kangaroos, platypuses and echidnas, in doing and still to be done. All this with the chilly hand of old age retarding the genial current in my soul and assuring

me that very soon—too soon for my ambition—I must lay down my tools and give up the joys of research for ever. Anyhow, if I can once wriggle out of this vertebrate organism I may find myself seeing better without these fleshly spectacles than with them; I only see now because there is *something behind my eyes*." One is reminded of William Blake: "I question not my corporeal eye any more than I would question a window concerning a sight. I look through it and not with it."

Considering the amount of work he did, it is curious to notice that his daily life was by no means that of a hard-worked man. He always—except when quite young—rose late, went to bed early, and dozed after dinner. His actual work was mostly done in the morning, and until the last few years he

wrote for two or three hours in the evening. He never made a spurt, never seemed in a hurry, but owing to his long self-training he concentrated into an hour what would take most men several hours to do: he might have said, like Andrea del Sarto, "No sketches first, no studies, that's long past."

His power of concentration was very great. When a medical student he used to read philosophical books as he walked along the Strand to and from King's College. During his early married life he constantly carried on his researches in the room where his children were playing or quarrelling. And in old age he used to say that a crowded railway station was an excellent place for meditation.

His memory, in everything connected with his work, was, up to the very last, little

short of marvellous: he never catalogued his preparations, and the few notes he made of his work were of the most sketchy description and were seldom referred to; but he seemed to remember without effort every fact he had ever observed, and the place in his cabinets of every slide and skeleton he had ever prepared.

He was a great talker, and delighted in nothing so much as in a long evening with some good listener interested in his pursuits. Attempts were always made by the rest of the family to make the conversation general, and to exclude science during the evening meal and in the drawing-room, but to no purpose; something invariably suggested *skull*, and then my father's eyes would brighten, and he would begin a learned, sparkling, discursive monologue on his beloved topic, interspersed with quotations, personal anecdotes, and refer-

ences to literature, religion, history, and indeed almost every subject under the sun except politics and business. On the earliest opportunity he would carry off his visitor to the study, where his remarks could be illustrated by the production of endless specimens and drawings, and by rough sketches scrawled on half-sheets of notepaper, or the margin of an *Athenæum*, often with coloured pencils. All this time his interlocutor could barely succeed in getting in a word edgewise, and every question or statement of a difficulty was instantly overwhelmed rather than answered by a fresh flood of illustrations, fact following fact and comparison comparison with bewildering rapidity. At ten or half-past he would accompany his guest to the door, where there was always another ten or fifteen minutes "in conclusion," and then, after bidding him good-bye, would

sink into a chair and exclaim, "That's a most intelligent young man, but I thought he'd never go; I'm dead tired."

His friend James Smetham, the painter, gives an account of an evening spent at his house in 1863, in which, with the touch of a true literary artist, he gives a vivid and accurate picture of my father's style of conversation.

"Spent yesterday with Parker. Mansford was there. P. talked in generals as long as he could abide, and then he gave us such a furious storm of ornithological anatomy about a bird that was an ostrich and a crocodile and a grouse and a crane and a hen. Do you understand? all of them together, each of them separately, and was going to be published in eight quarto plates, exquisitely tinted, the cartilaginous bones one colour, the solid bones another. Do

you *see?* And Owen has put his foot in it (crossing his in imitation of the mess that Professor Owen is in — executed on his own legs — from which I gather that Professor Owen is just like this, as near as I can make out); and as to the 'crocodile bird,' why that is a net, you perceive, but not spread out. It is a net all in a lump, the reticulations crossing (like Professor Owen's legs) through countless ages. It is evident that Professor Owen's legs are in a mortal twist, and it is impossible that he can ever stand upright again; and so, as I was saying, there is no doubt that the reptilian character of this bird and its intricate relations to the 'mound-makers'—birds that *peck* their way out of the shell and *dig* their way out of the dunghill—is also established. Besides this—now look

[Here is a drawing of Professor Owen with legs crossed and re-crossed, ending in a diminishing tail of crossings.]

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[1] *Letters of James*

hardly fail to impress any one, gentle or simple, learned or illiterate, it was so intensely fresh and unconventional. As Dr. Johnson said of Burke, one could hardly go with him under a shed to shun a shower without seeing that he was an extraordinary man.

His interest in the outer world was singularly small; the only newspapers he read were the *Athenæum* and the *British Medical Journal*: a daily paper was as rare in his house as an *édition de luxe*. I have a very dim recollection of the house in Bessborough Street being illuminated on the declaration of peace after the Crimean War, and of hearing references to the Indian Mutiny, but can hardly recall a single conversation on the more recent wars; while as for home politics, if he knew whether the Liberals or Conservatives were in, and who

was Prime Minister, that was quite the extent of his interest in the matter.

Besides a talk with a congenial spirit, his only recreations were reading and an occasional visit to one of the commons, which he enjoyed with the ardour of a schoolboy. Amusements, as generally understood, he had none: I doubt if he ever played a game of any sort in his life—at least after boyhood; and the only theatrical entertainment he ever went to was one of Mr. and Mrs. German Reed's. He enjoyed it immensely, laughing to tears at the fun, and pointing out all the jokes to one of his sons who considered himself an *habitué* of the Gallery of Illustration and felt rather offended at being treated as a novice. Strangely enough, considering his abiding love of the beautiful, he was never inside St. Paul's, only once or twice in Westminster Abbey, and hardly

ever went to either a picture gallery or a concert.

He was a great lover of the best literature, a fact which is obvious enough in nearly all his writings, where his apt but too numerous quotations are often very effective. His two chief books were the Bible and Shakespeare, both of which he knew almost by heart. He was also very fond of Milton, Spenser, and Tennyson, and was a fervent admirer of Bacon and of two theological writers—Bishop Butler and John Howe; the sermons of the latter painful divine were for many years his regular Sunday reading. But he also read all the best new books, obtaining his supplies from Mudie's with great regularity. He was especially fond of biography and theology, and of the heavier Reviews, especially the *Quarterly* and *Edinburgh*: fiction he cared comparatively little for: he

loved Scott, but positively disliked Dickens and all but the earlier works of George Eliot, and he rarely read any of the second-class novels. After retiring from practice his time for reading was much increased, and he made full use of it. His love for general literature never declined, his experience in this respect being a marked contrast to Darwin's, who in his later years could not endure to read a line of poetry, and found Shakespeare intolerably dull.

VII

My father has more than once been compared, both in character and in personal appearance, to Faraday: his earnest piety gives him a still stronger resemblance to the great physicist. To dismiss the matter by saying that he was a Wesleyan who in his latter days went to church instead of chapel would be to make a statement misleading in its baldness. For more than fifty years he lived an intensely religious life, the central fact of which was his firm conviction that on a given day his sins had been for-

given, and he had been received into the Divine favour. Mr. Bettany records what, in substance, every one who knew him intimately must have heard from his lips: "You believe in conversion? Thirty-eight years ago this night (30th December 1876) at eight o'clock I knew that my sins were forgiven—as surely as I know anything." From his fifteenth year to his death he kept undimmed by illness or sorrow an abiding sense of the Divine presence and of his own acceptance; and the spiritual life of prayer and communion with the Unseen went on concurrently with the active life of the medical practitioner and the contemplative life of the man of science. I borrow once more Mr. Bettany's record of his own words:—

"I pray in everything; before beginning anything. When I sit down to my work

in a morning, I feel that God has a perfect right to do with me as He will for that particular morning: and I am content whatever happens. All through I see His glory and His handiwork. I commune with God as with a dear friend, telling all my thoughts and all my ways to my ever-present Counsellor and Friend. He lifteth me up when I am cast down; and at times I rise into an ecstasy of spiritual joy and feeling, and am almost beyond the earth."

To a man of this kind it was a matter of little importance whether he was associated with this religious body or with that: he was brought up and received his first spiritual impressions among Methodists; a different religious environment would have made him a Quaker, a Molinist, a Churchman of the type of Herbert or Ferrers, or a Roman Catholic of the type of Faber.

Naturally, to one whose religion was so intensely subjective, the points at issue between orthodox Christianity and Rationalism were matters of very minor importance, since, to his mind, there could be no doubt on which side the final victory would be. His own spiritual experiences were to him the proof of Christianity, and all the rest —the inspiration of the Bible, the occurrence of miracles, the truth of prophecy— followed as a matter of course. Yet, although his faith in essentials was unshaken, it cannot be said that his views on minor matters were unaffected as his knowledge of Nature grew; and it was characteristic of him that when he himself had abandoned an outwork he was quite unable to sympathise with those quixotic persons who continued to defend it. In one of the numerous digressions in *Mammalian Descent* he quotes

an account of a Buddhist creative miracle, and then says:—

"This creation-feat is scarcely greater than the one supposed to take place in the case of the first creation of every tree and every animal, by those who are unversed in Biology, and who interpret, literally, the account of the Creation given in the first chapter of Genesis.

"But some of those who have a little knowledge, even of Biology, have very misty notions of the origin of living creatures.

"One such suddenly startled the writer by a hurried utterance of his cherished creed, which was as follows: 'I believe that God created *Wellingtonia gigantea*, 400 feet high, in a moment.'

"This speaker, whose power of mental deglutition was so great, was one of our own calling, and therefore had undergone a bio-

logical training; surely we may hope that better days are in store for us, when no educated man will be in danger of falling into such a deep pit of *belief* as this."

In this and like matters his want of logical power produced a certain inconsistency in his views, and caused him to adopt a *via media* which was satisfactory only to himself. He once shocked some Wesleyan friends by saying that in the miracle of the loaves and fishes there was no creation of matter, only a re-combination of elements already existing in the atmosphere: it would have distressed him deeply to be told that the refusal to believe in the instantaneous production of starch, gluten, and striped muscle was not one whit more sceptical than his own refusal to credit the formation *de novo* of the actual chemical elements.

But, in spite of a tendency to restate many of the Biblical miracles in a way calculated to diminish their stupendousness, he disliked and distrusted all elaborate attempts to "harmonise" Science and Scripture. He persistently refused to join the Victoria Institute, on the unassailable ground that there is no point of contact between the things of Nature and the things of Faith, and that the two should be kept in what Rénan calls distinct water-tight compartments of the mind. On one occasion, when pressed to become an active member of the society referred to, he wrote to this effect: "Let your society try and explain the swimming of Elisha's axe-head by the laws of hydrostatics; I believe the axe-head swam, but I don't believe it can be explained."

Up to middle life his orthodoxy was of the strictest: he once objected to some of his

children going to hear a clergyman who believed in the annihilation instead of the eternal punishment of the wicked. But in later years his views underwent a great broadening, and he made no objection to secessions on the part of various members of his family, on the one hand to the church of which Canon Wilkinson—afterwards Bishop of Truro—was vicar, and on the other to Mr. Stopford Brooke's proprietary chapel.

For nearly thirty years he was, like his friend Smetham, a "class-leader" among the Wesleyans. But by the age of fifty or thereabouts the members of his class gradually fell off—probably finding their leader too transcendental, and preferring the more conventional advice and consolation of lesser men. As long as he remained in Pimlico he continued to attend the chapel in Claverton Street, only relieving his feelings by audible

comments on the sermon while it was going on, and by trenchant criticisms of it during dinner or supper. But many things in Methodism—the want of culture of some of the ministers, and especially the intermittent revivalism — distressed and irritated him; and although his innate dislike of altering his habits kept him to his accustomed place of worship, it was quite evident that the more decent and orderly ceremonial of the Church of England had greater attractions for him. And when he moved to Upper Tooting he began at once to attend the neighbouring church of St. Mary Magdalene as if he had never gone anywhere else, and without the slightest sense of break in the continuity of his religious life. In fact, although he was a Methodist up to old age, he was never, at least as far as his own feelings went, a dissenter, and disliked nothing so much as to be

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His biographer in the *Athenæum* referred to the intense happiness of his life. But there was another side to the picture: with him periods of exaltation and of almost boyish spirits alternated with times of the deepest depression. A new discovery, the gift of a longed-for specimen, a word of praise of his work from one whose opinion he valued, would send him into the seventh heaven of joy: an attack of the digestive trouble from which he constantly suffered, the arrival of an unexpected bill when the exchequer was low, and, above all, the illness of his wife or children, sank him into the deep waters of despondency.

But ill or well, depressed or exalted, his beloved work was never absent from his mind. He writes, in 1877, to Professor Flower: "I should come and talk to you about things, but you are bothered enough,

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friend, the Rev. John Philp, tells that some patient had left him because he made light of her malady and gave her no medicine; his friend asked why he could not have prescribed some harmless nostrum rather than risk the loss of a patient, and goes on to say, "I see him now as with a contemptuous frown he exclaimed 'Bosh!'" I believe he would have risked starvation rather than have condescended to anything, however harmless, which he considered a mere trick of the trade.

Of his relations to his family little need be said—

> " . . . Those best portions of a good man's life,
> His little, nameless, unremembered acts
> Of kindness and of love,"

are just those which it is most difficult and least satisfactory to write about. His intense devotion to his wife and family; his terrible

distress during the illness of any of us; his excellent qualities as a playfellow for the younger ones and as a companion for all; the righteousness of his dealings with us, and his keen anxiety for our welfare both of soul and body—are not all these things written in the hearts of his children?

As to personal appearance, he was above the middle height—nearly 5 feet 10—large boned, but sparely and rather loosely built, and with a slight stoop. His head was of moderate size and well shaped, with a square forehead; his complexion dark; his hair sparse and lank, nearly black, and brushed well back from the forehead; he became decidedly gray and rather bald at fifty or thereabouts, and by sixty was nearly white. He had a large mobile mouth with slightly projecting lower lip, and very white and regular front teeth; his chin was rounded and deeply cleft or dimpled.

His smile was singularly sweet and winning. Both mouth and chin were always exposed as he never wore either moustache or beard. His eyes formed the most noticeable feature of his face; they were dark brown, and wonderfully bright and expressive. His hands, though long and bony, were slender and slim-fingered. He walked rapidly, swinging both arms and legs a good deal: all his movements were quick and nervous.

The frontispiece gives a fair notion of his appearance in later life; the best portrait I have ever seen of him is a large full-length photograph taken by Hering of Regent Street, when he was about forty-five years of age: the head of a somewhat less satisfactory likeness is reproduced in photogravure in the Journal of the Royal Microscopical Society for 1885. But in most cases photographs give him a strained and

unnatural appearance, and many of them are absolute caricatures. All fail to show the animated expression which was so characteristic of him, and in particular the brilliancy of his eyes.

VIII

THERE is little to be said of my father's life after his final settlement in Hendham Road. His habits became more retired, and almost his only outing was an annual visit to his friend Mr. W. H. Budgett, of Stoke House, Bristol. But in spite of advancing age and undiminished weakness, his spirit was the same as ever, and the following extract from a letter to Miss Blanche Leppington shows how the old man of sixty-five retained all the fresh, ardent enthusiasm for God and

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flowers, the settling of a speckled metallic-feathered starling close to me, and the song of the lark above head, made the weariness a mere trifle. Largely that has been the case in after life: the joy of research has been the wine of my life, and even now it is [so], although often sorely hindered through debility and attacks of care.

"All through these last fifty years 'the joy of the Lord has been my strength,' and the supposed old wives' fables and cunningly-contrived deceptions of the four Gospels, which according to —— it is immoral to believe, these supposed inventions of those old Jews have been the strength of my life —they have lifted up my mind. As for the knowledge of modern science, it is only ignorance with its eyes open. Constructive geniuses, like the fine fellow just mentioned, can build you any number of Summer Palaces

of thought, but they are as thin and weak as gossamer.

"The smallest organic creature has the stamp of infinity upon it. I shall know what a Primrose is when I see it in the light of the face of its Maker. Now, it is a normally-miraculous link in a practically infinite chain of normally-miraculous living creatures.

"All that glamour about protoplasm, morphological law, evolution of types, etc. etc., is big tall talk: not one of us could fathom the life of a red-flowered Pimpernel, even in a hundred years. We have 'nothing to draw with, and the well is deep.'"

On the 10th of March 1890 my mother died; and only those who know how my father had leant upon her for support in all the daily cares of life for more than forty years, can guess what the loss was to him,

and how poignant were his sufferings during her painful illness.

Not long afterwards he wrote: "There is no *gospel* in organisation; it is done by means of a 'decree that cannot pass.' Please don't try and comfort me from the scientific side of life: I won't take that poor drug: I know of something better—infinitely better—it is the old-fashioned 'Balm of Gilead.'

"The beauty of living forms has, you know, been the joy of my æsthetic and mental life; but these phenomena of loveliness are all shadows, and from me even now they are passing away. . . .

". . . But these two eyes, that have certainly served me well hitherto, are only clay tools and will be of no use soon! There! if you will, do preach science to me, and say that I and my eyes have had their day and I must be willing to 'move

on' and let a new generation do the morphology.

"Thank you, ma'am! But I've got an old Book here that tells me of a spiritual body and of victory over death and of everlasting life. Thus when my reason faints and dies, my faith lives and more than conquers. I have got nothing now to do but to die myself and that will be a mere spasm: already as to bodily personal pain I've had my share (my wife once said that it was forty times the share of an average man), but I'm in a position to defy it."

The last sentence was prophetic. A few weeks later he had a slight attack of *angina pectoris*, but soon recovered and felt no alarm. Towards the end of June he was well enough to pay his usual annual visit to Mr. W. H.

Budgett, and on the 2nd of July continued his journey to Cardiff in order to spend a few days with his second son. He had recovered much of his wonted cheerfulness, and was as full of enthusiasm and of plans for future work as ever. On the following day, after lunch, he lay on the sofa in my brother's study with *The Talisman* in his hand, now reading a little, now dozing for a minute or two, now chatting in his old bright way. Suddenly he began to breathe heavily; before my brother could reach him he was unconscious, and in a few minutes he had passed away without a word or a sign.

On the 7th of July he was buried by my mother's side in Wandsworth Cemetery. They rest beneath a recumbent cross of

red granite surrounded by a low coping with the inscription :—

In Loving Memory of
WILLIAM KITCHEN PARKER, F.R.S.
Born 23rd June 1823 ; Died 3rd July 1890.
For fifty years
A devout and unwearied student of Nature.
And of ELIZABETH, his Wife,
Born 18th February 1825 ; Died 10th March 1890.

My father's character and scientific position are summed up, in the Obituary Notices of the *Proceedings of the Royal Society*, in a paragraph which will form a better conclusion to the present brief and imperfect sketch of his life than any words of my own.

"An unworldly seeker after truth, and loved by all who knew him for his uprightness, modesty, unselfishness, and generosity to fellow-workers, always helping young

inquirers with specimens and information, he is lost to sight as a friend and father, but lives in the minds of his fellow-workers, of those whom he so freely taught, and of his bereaved relations, as a great and good man, whose beneficent influence will ever be felt in a wide-spreading and advancing science by thoughtful and appreciative men."

LIST OF PUBLISHED WORKS

A.—*On the Foraminifera*

1. On the *Miliolitidæ*. *Micros. Soc. Trans.*, vol. vi., 1858, pp. 53-59.

(*The following twenty-nine papers were written in conjunction with Professor T. Rupert Jones, F.R.S.*)

2. Description of some Foraminifera from the Coast of Norway. *Annals and Mag. of Nat. Hist.*, vol. xix. (series 2), 1857, pp. 273-303; 2 plates.
3. On the Nomenclature of the Foraminifera. *Annals and Mag. of Nat. Hist.*, vol. iii. (series 3), 1859, pp. 474-482.
4. Do. do., vol. iv., 1859, pp. 333-351.
5. Do. do., vol. v., 1860, pp. 98-116.
6. Do. do. do. pp. 174-183.
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10. On the Nomenclature of the Foraminifera. *Annals and Mag. of Nat. Hist.*, vol. vi., 1860, pp. 337-347.
11. Do. do., vol. viii., 1861, pp. 161-168.
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17. Do. do. do. do. pp. 280-300.
18. Do. do., vol. x., 1872, pp. 184-200.
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21. Note on the Foraminifera from the Bryozoan Limestone, near Mount Gambier, S. Australia. *Journal Geol. Soc.*, vol. xvi., 1860, p. 261.
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23. On some Fossil Foraminifera from Chellaston, near Derby. *Journal Geol. Soc.*, vol. xvi., 1860, pp. 452-458; 2 plates.
24. On the Foraminifera of the Crag. *Annals and Mag. Nat. Hist.*, vol. xiii., 1864, pp. 64-68.
25. On the Foraminifera of the London Clay. *Geologist*, vol. vii., 1864, pp. 85-89.
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and Arctic Oceans, including Davis Straits and Baffin Bay (1864). *Phil. Trans.*, 1865, pp. 325-441 ; 8 plates.

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28. Notes on Eley's Foraminifera from the English Chalk. *Geol. Mag.*, vol. ix., 1872, pp. 123-126.
29. On the Foraminifera of the family *Rotalinæ*, Carpenter, found in the Cretaceous Formations, with Notes on their Tertiary and Recent Representations. *Quart. Journ. Geol. Soc.*, vol. xxviii., 1872, pp. 103-131 ; *Phil. Mag.*, vol. xliii., 1872, p. 543.
30. On *Ovulites margaritula*. *Annals and Mag. Nat. Hist.* (series 4), vol. xx., 1877, p. 77.

(*The following five papers were written in conjunction with Dr. H. B. Brady, F.R.S., and Professor T. Rupert Jones, F.R.S.*)

31. On the Nomenclature of the Foraminifera. *Annals and Mag. Nat. Hist.*, vol. xv. (series 3), 1865, pp. 225-232.
32. Do. do., vol. xvi., 1865, pp. 15-41.
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(*The following paper was written in conjunction with Professor T. Rupert Jones and Mr. J. W. Kirkby.*)

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B.—*On the Vertebrate Skeleton generally*

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C.—*On the Vertebrate Skull*

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D.—*Books and Miscellaneous Works*

100. Addresses before the Royal Microscopical Society. *Monthly Micros. Journal*, vol. vii., 1872, pp. 89-97, and vol. ix., 1873, pp. 97-102.
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THE END

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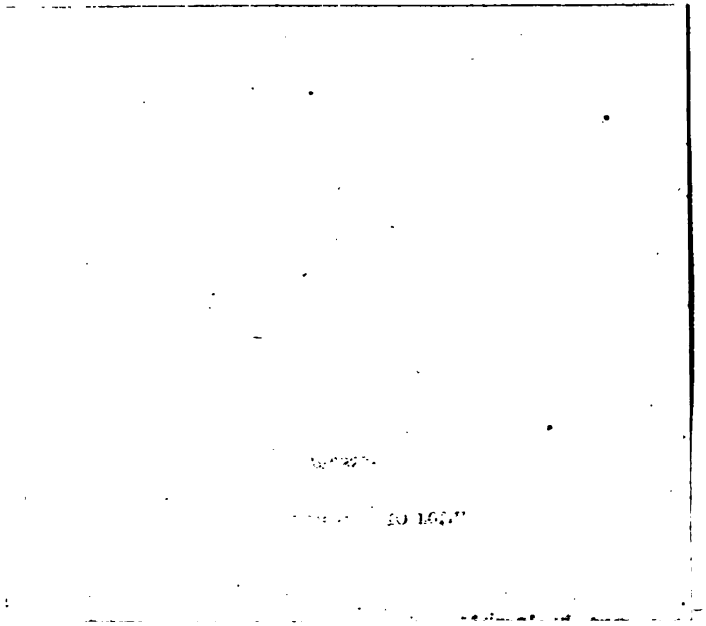

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